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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,399	01/21/2005	Michael Koecher	W&L Case 100	6316

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EXAMINER
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TALBOT, MICHAEL

ART UNIT	PAPER NUMBER
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3722

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/522,399

Applicant(s)

KOECHER, MICHAEL

Examiner

Michael W. Talbot

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 19-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 1/21/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. In Applicant's response dated 27 June 2006, a provisional election was made without traverse to prosecute the invention of Group I, claims 1-18. Therefore, Group II comprising claims 19-23 and Group III comprising claims 24-35 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### *Specification*

2. The abstract of the disclosure is objected to because of the inclusion of legal phraseology (i.e. means). Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The disclosure is objected to because of the following informalities:

Refer to page 7, line 35, the two occurrences of the character reference "ribs 22" should be changed so as to read --lands 22--.

Refer to page 10, line 5, the character reference "central aperture 14" should be changed so as to read --central aperture 40--.

Refer to page 11, line 39, the character reference "joining region 18" should be changed so as to read --joining region 18" --.

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Refer to page 12, line 19, the character reference "internal cones 44" should be changed so as to read --internal cones 46--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 4, 10, 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Regarding claim 4, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

7. Regarding claim 10, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

8. Regarding claim 13, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

9. Regarding claim 14, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1,4,9,15,16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foerster '613. Foerster '613 discloses a cutting tool having a tool shank and a cutting head (col. 1, lines 25-27) made of different materials (col. 1, lines 42-46 and col. 2, lines 3-12) which are integrally connected to one another via a joining layer made of a ductile brazing material (col. 1, line 70 through col. 2, line 2) at joining surfaces and powder particles (col. 1, line 70 through col. 2, line 2) made of temperature resistant material having a lower coefficient of thermal expansion than the brazing material being embedded into the joining layer. Foerster '613 further discloses the tool shank being made of steel, (col. 2, lines 3-12 and lines 66-71) the cutting head being made of carbide (col. 1, lines 42-46) and, the joining layer being made of copper-manganese-nickel with a thickness of 1/32 inch (0.794 mm) and the powder particles being made of nickel (col. 1, line 70 through col. 2, line 2).

Foerster '613 discloses the claimed invention except for the joining layer having a different coefficient of thermal expansion over its layer thickness such that the coefficient of thermal expansion is lower on the side of the cutting head than on the side of the tool shank. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to vary the coefficient of thermal expansion across the layer thickness, for the purpose of reducing the thermal stresses at the specific material interfaces, thus improving the adjoining connection, by best matching the coefficient of thermal expansion of the layer thickness interface with that of the respective adjoining material compositions because it has been held that discovering an optimum value of a result effective variable involves only routine experimentation.

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12. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foerster '613. Foerster '613 discloses the claimed invention except for the density of the powder particles varying over the thickness of the joining layer such that the density of the powder particles is higher on the side of the cutting head than on the side of the tool shank. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to vary the density of the powder particles over the thickness of the joining layer, for the purpose of reducing the thermal stresses at the material interface by best matching the coefficient of thermal expansion of the layer thickness interfaces with that of the respective material composition because it has been held that discovering an optimum value of a result effective variable involves only routine experimentation.

13. Claims 4-6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foerster '613 in view of Guhring '055. Foerster '613 further discloses a tool shank made of 0.6 to 0.9 percent chromium (chrome being "a part of" the element chromium). Foerster '613 lacks the tool shank being made from tool steel or a case-hardening steel carburized or nitrided at least on the outer surface.

Guhring '055 shows in Figures 1-1a a cutting tool (1) having a tool shank (2,3) made from tool steel or case-hardening nitriding steel (col. 5, lines 25-29) to form an outer skin hardness. In view of this teaching of Guhring '055, it would have been obvious to one of ordinary skill in the art to manufacturing the tool shank of Foerster '613 from either a tool steel of a case-hardening nitriding steel as taught by Guhring '055 to provide sufficient elasticity, skin hardness and toughness.

14. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foerster '613 in view of Guhring '055. Foerster '613 lacks the tool shank having at least one

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helically wound flute and at least one helically wound functionally passage which passes through the joining layer in the direction of the cutting head.

Guhring '055 shows in Figures 1-1a a cutting tool (1) having at least one helically wound flute (21,61) and at least one helically wound functionally passage (4,7) which passes through the joining layer in the direction of the cutting head. In view of this teaching of Guhring '055, it would have been obvious to one of ordinary skill in the art to manufacturing the tool shank of Foerster '613 to include at least one helically wound flute and at least one helically wound functionally passage as taught by Guhring '055 to provide for chip evacuation and a means for coolant delivery to the cutting tip, thus reducing heat generation and tip wear.

15. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foerster '613 in view of Guhring '055. Foerster '613 in view of Guhring '055 discloses the claimed invention except for the tool steel being made of 16MnCr5 steel. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to select 16MnCr5 steel for the purpose of its well-known distinct mechanical properties, because it has been held to be within the general skill of a worker in the art to select a known material composition on the basis of its suitability for the intended use as a matter of obvious design choice.

16. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foerster '613 in view of Nagel 2002/0009340. Foerster '613 lacks the joining surface of the cutting head being convexly curved and facing the joining surface of the tool shank which is concavely curved so as to be complementary to one another.

Nagel 2002/0009340 shows in Figures 2-6 a cutting tool (11) having a joining surface of the cutting head (12) being convexly curved (15) and facing the joining surface of the tool shank (13) which is concavely curved (14) so as to be complementary to one another (page 2 through 2, paragraph [0032]). In view of this teaching of Nagel 2002/0009340, it would have been

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obvious to one of ordinary skill in the art to manufacturing the tool shank and cutting head of Foerster '613 to include complementary curved joining surfaces as taught by Nagel 2002/0009340 to provide for an increased brazing contact surface area, thus improving the connection weld between the two adjoining pieces.

17. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foerster '613. Foerster '613 discloses the claimed invention except for the thickness of the joining layer corresponding to 10 to 1000 times the diameter of the powder particles. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to select the joining layer corresponding to 10 to 1000 times the diameter of the powder particles for the purpose of reducing the thermal stresses at the specific material interfaces, thus improving the adjoining connection, because it has been held to be within the general skill of a worker in the art to select a known material composition on the basis of its suitability for the intended use as a matter of obvious design choice.

18. Claims 1,10-12,15,16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thielen et al. '854 in view of Davies et al. '954. Thielen et al. '854 discloses a cutting tool having a tool shank (11) and a cutting head (12) made of different materials which are integrally connected to one another via a joining layer (15) made of a ductile brazing material (col. 3, line 7-18) at joining surfaces (13,14). Thielen et al. '854 further discloses the joining layer being made of a silver/copper/silver composition with a thickness of 0.015 inches (0.381 mm). Thielen et al. '854 further shows a joining surface of the cutting head (14) being convexly curved and facing the joining surface of the tool shank (13) which is concavely curved so as to be complementary to one another (col. 3, lines 55-50). Thielen et al. '854 lacks the joining layer having powder particles made of temperature resistant material having a lower coefficient of thermal expansion than the brazing material being embedded into the joining layer.



Davies et al. '954 shows in the Figure the manufacturing of a metallic strips used in brazing containing a brazing ductile material (col. 1, lines 57-60) containing powder particles (col. 1, lines 57-66) made of temperature resistant material having a lower coefficient of thermal expansion than the brazing material being embedded into the joining layer. In view of this teaching of Davies et al. '954, it would have been obvious to one of ordinary skill in the art to add temperature resistant powder particles to the adjoining brazing layer thickness for the purpose of reducing the thermal stresses at the specific material interfaces by matching the coefficient of thermal expansion of the layer thickness interface with that of the respective adjoining material compositions.

Thielen et al. '854 in view of Davies et al. '954 discloses the claimed invention except for the joining layer having a different coefficient of thermal expansion over its layer thickness such that the coefficient of thermal expansion is lower on the side of the cutting head than on the side of the tool shank. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to vary the coefficient of thermal expansion across the layer thickness, for the purpose of reducing the thermal stresses at the specific material interfaces, thus improving the adjoining connection, by best matching the coefficient of thermal expansion of the layer thickness interface with that of the respective material composition because it has been held that discovering an optimum value of a result effective variable involves only routine experimentation.

19. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thielen et al. '854 in view of Davies et al. '954. Thielen et al. '854 in view of Davies et al. '954 discloses the claimed invention except for the density of the powder particles varying over the thickness of the joining layer such that the density of the powder particles is higher on the side of the cutting head than on the side of the tool shank. It would have been obvious to one of ordinary skill in

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the art at the time of the invention was made to vary the density of the powder particles over the thickness of the joining layer, for the purpose of reducing the thermal stresses at the material interface by best matching the coefficient of thermal expansion of the layer thickness interfaces with that of the respective material composition because it has been held that discovering an optimum value of a result effective variable involves only routine experimentation.

20. Claims 4,5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thielen et al. '854 in view of Davies et al. '954, further in view of Guhring '055. Thielen et al. '854 in view of Davies et al. '954 lacks the tool shank being made from tool steel or a case-hardening steel carburized or nitrided at least on the outer surface.

Guhring '055 shows in Figures 1-1a a cutting tool (1) having a tool shank (2,3) made from tool steel or case-hardening nitriding steel (col. 5, lines 25-29) to form an outer skin hardness. In view of this teaching of Guhring '055, it would have been obvious to one of ordinary skill in the art to manufacturing the tool shank of Thielen et al. '854 in view of Davies et al. '954 from either a tool steel or a case-hardening nitriding steel as taught by Guhring '055 to provide sufficient elasticity, skin hardness and toughness.

21. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thielen et al. '854 in view of Davies et al. '954 in view of Guhring '055, further in view of Foerster '613. Thielen et al. '854 in view of Davies et al. '954 in view of Guhring '055 lacks the tool shank being made from case-hardening steel having a chrome content of less than 2 percent.

Foerster '613 discloses a case-hardening tool shank made of 0.6 to 0.9 percent chromium (chrome being "a part of" the element chromium). In view of this teaching of Foerster '613, it would have been obvious to one of ordinary skill in the art to manufacturing the tool shank of Thielen et al. '854 in view of Davies et al. '954 in view of Guhring '055 to include less

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than 2 percent chrome as taught by Foerster '613 to provide the required mechanical properties to allow for sufficient elasticity, skin hardness and toughness.

22. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thielen et al. '854 in view of Davies et al. '954, further in view of Guhring '055. Thielen et al. '854 in view of Davies et al. '954 lacks the tool shank having at least one helically wound flute and at least one helically wound functionally passage which passes through the joining layer in the direction of the cutting head.

Guhring '055 shows in Figures 1-1a a cutting tool (1) having at least one helically wound flute (21,61) and at least one helically wound functionally passage (4,7) which passes through the joining layer in the direction of the cutting head. In view of this teaching of Guhring '055, it would have been obvious to one of ordinary skill in the art to manufacturing the tool shank of Thielen et al. '854 in view of Davies et al. '954 to include at least one helically wound flute and at least one helically wound functionally passage as taught by Guhring '055 to provide for chip evacuation and a means for coolant delivery to the cutting tip, thus reducing heat generation and tip wear.

23. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thielen et al. '854 in view of Davies et al. '954 in view of Guhring '055. Thielen et al. '854 in view of Davies et al. '954 in view of Guhring '055 discloses the claimed invention except for the tool steel being made of 16MnCr5 steel. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to select 16MnCr5 steel for the purpose of its well-known distinct mechanical properties, because it has been held to be within the general skill of a worker in the art to select a known material composition on the basis of its suitability for the intended use as a matter of obvious design choice.

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24. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thielen et al. '854 in view of Davies et al. '954. Thielen et al. '854 in view of Davies et al. '954 discloses the claimed invention except for the thickness of the joining layer corresponding to 10 to 1000 times the diameter of the powder particles. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to select the joining layer corresponding to 10 to 1000 times the diameter of the powder particles for the purpose of reducing the thermal stresses at the specific material interfaces, thus improving the adjoining connection, because it has been held to be within the general skill of a worker in the art to select a known material composition on the basis of its suitability for the intended use as a matter of obvious design choice.

#### ***Conclusion***

25. Any inquiry concerning the content of this communication from the examiner should be directed to Michael W. Talbot, whose telephone number is 571-272-4481. The examiner's office hours are typically 8:30am until 5:00pm, Monday through Friday. The examiner's supervisor, Mrs. Monica S. Carter, may be reached at 571-272-4475.

In order to reduce pendency and avoid potential delays, group 3720 is encouraging FAXing of responses to Office Actions directly into the Group at FAX number 571-273-8300. This practice may be used for filling papers not requiring a fee. It may also be used for filing papers, which require a fee, by applicants who authorize charges to a USPTO deposit account. Please identify Examiner Michael W. Talbot of Art Unit 3722 at the top of your cover sheet.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



MWT  
Examiner  
4 September 2006

  
MONICA CARTER  
SUPERVISORY PATENT EXAMINER